

**NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
FACT SHEET**

(Pursuant to NAC 445A.236)

Permittee: City of Fallon
55 W Williams Ave
Fallon NV 89406

Permit No.: NV0020061

Facility: Fallon Wastewater Treatment Plant
1375 New River Parkway
Fallon NV 89406
Churchill County
Latitude: 39° 26' 00" North
Longitude: 118° 45' 00" West
T19N R29E S32

General: The City of Fallon's wastewater treatment plant is based on three sequencing batch reactors (SBRs) with a combined capacity of 2.2 MGD. Pretreatment is accomplished by a grit chamber and mechanical auger screen, with a barscreen equipped bypass channel. Screening loads are reduced considerably by the trash rack in the adjacent lift station. Air is withheld for most of the fill cycle, delaying reaction and therefore resulting in maximum distribution of influent with biomass. Near the end of the fill cycle aeration is initiated through distributed jet nozzles, achieving nitrification within the jet streams, and denitrification in the oxygen poor areas throughout the basin. Each batch cycle of this activated sludge process concludes with quiescent settling followed by decanting and discharge of the liquid portion to the chlorine contact basin. A portion of the settled sludge is removed periodically and pumped to an aerobic digester. Following the one week digestion period the sludge is pumped to one of two HDPE lined storage ponds, with an estimated capacity of four years each. One pond is nearly full and the city intends to apply the material to agricultural land. This will be accomplished under a separate permit. Prior to start up of the current plant in 2001 an aerated pond system was in use for approximately 30 years, and sludge disposal was only required when the ponds were shut down. That residual was also put to agricultural use, on an adjacent field. Four decant cycles daily are discharged to the chlorine contact basin and held for 35 minutes each. Following disinfection, sodium metabisulfite is mixed in at the basin's discharge pipe for dechlorination; with the final effluent discharged to a rock lined ditch leading to a short tributary of New River Drain.

Receiving Water Characteristics New River Drain is a tail water ditch that is part of the Truckee Carson Irrigation District (TCID) system. Although normally considered to drain to Harmon Reservoir, for further irrigation use, followed by excess flow to Stillwater National Wildlife Refuge, in practice the system is

**Nevada Division of Environmental Protection
Fact Sheet**

City of Fallon Wastewater Treatment Plant

NV0020061

Page 2 of 7

operated to direct flow to L-Line Canal and Carson Lake Pasture. Drain sampling was initiated under the previous permit in an effort to establish background conditions and any apparent effects of the discharge. Summaries of monthly data for effluent, upstream, and downstream locations for January through June of 2005 are given in the table below.

Averages of Monthly Sample Data Effluent, and Upstream and Downstream Locations in New River Drain January - June 2005				
mg/l, except as noted	Upstream	Effluent	Downstream	Criteria ¹
Total Dissolved Solids	725	770	733	500
Total Kjeldahl Nitrogen as N	1	2.1	1.4	-
NO ₃ as N	1.02	0.89	0.99	10
Total NH ₃ as N	0.3	0.8	0.6	8.4
Unionized NH ₃ - N	0.006	0.015	0.013	-
Total Nitrogen	2.1	3.0	2.5	-
Total Phosphorus	0.32	0.12	0.34	1.0
Fecal Coliform, cfu/100 ml	199	2	327	400
pH, S.U.	8.08	7.95	8.05	6.5 - 8.5
Dissolved Oxygen	4.3	2.1	4.4	> 5.0

1. NAC445A.118 and 445A.126

As can be seen from the table, effluent and downstream results are usually higher than upstream, although not by large amounts.

Rational for Permit Requirements

From the draft permit:

Table I.A.1 - Influent, Effluent, and New River Drain Monitoring

Parameter mg/l except as noted		Limitations		Monitoring Requirements		
		30 Day Avg	Daily Max	Sample Location	Measurement Frequency	Sample Type
Flow, MGD	Influent	monitor & report		i	continuous	meter
	Effluent	2.2	3.3	ii	continuous	calculated
TSS	Influent	monitor & report		i	weekly	composite
	Effluent	30	45	ii	weekly	composite
	% Removal	85	-	calculate from i & ii (30 day avg)		
BOD	Influent	monitor & report		i	weekly	composite
	Effluent	30	45	ii	weekly	composite
	% Removal	85	-	calculate from i & ii (30 day avg)		
Fecal Coliform, mpn/100 ml		200	400	ii, iii	weekly ¹	discrete
pH, Standard Units		-	6.5-8.5	ii, iii	weekly ¹	discrete
Total Residual Chlorine		-	0.1	ii	weekly	discrete

**Nevada Division of Environmental Protection
Fact Sheet**

City of Fallon Wastewater Treatment Plant

NV0020061

Page 3 of 7

Parameter mg/l except as noted		Limitations		Monitoring Requirements		
		30 Day Avg	Daily Max	Sample Location	Measurement Frequency	Sample Type
Nitrogen Species as N	Total	-	10	ii, iii	monthly	discrete
	Nitrate	monitor & report		ii, iii	monthly	discrete
	Total Ammonia	monitor & report		ii, iii	monthly	discrete
	Unionized Ammonia	monitor & report		ii, iii	monthly	discrete
	Kjeldahl	monitor & report		ii, iii	monthly	discrete
Total Phosphorus as P		monitor & report		ii, iii	monthly	discrete
Total Dissolved Solids		monitor & report		ii, iii	monthly	discrete
Dissolved Oxygen		monitor & report		ii, iii	monthly	discrete
Chlorophyll - a		monitor & report		iii	monthly	discrete
Temperature, °C		monitor & report		ii, iii	monthly	meter
Priority Pollutants ² , ug/l		monitor & report		ii	annual 4th qtr	discrete
Hardness, mg/l as CaCO ₃		monitor & report		iii	annual 4th qtr	discrete

i = influent, taken at headworks

ii = effluent, taken prior to mixing with receiving waters

iii = New River Drain upstream and downstream of discharge

1. Measurement frequency for New River Drain is monthly.

2. See Appendix A

7 DAY AVERAGE VS DAILY MAXIMUM: The previous permit had *7 Day Average* limitations for flow, BOD, TSS, fecal coliform, and total free chlorine. These have been replaced with *Daily Maximum* limitations, using the same numbers. This has been done for several reasons.

- The weekly and monthly sampling frequencies specified are insufficient to determine a 7 Day Average.
- The flow, fecal, and chlorine limits are not based on 7 day averages.
- Although the BOD and TSS limits are based on 7 day averages, application as a daily maximum is more restrictive and is the approach usually used by the Division.

Additional details on the individual parameters are given in their respective paragraphs below.

30 DAY AVERAGE WEIGHT LIMITS: The previous permit had 30 day average limits for BOD, TSS, and total nitrogen expressed as pounds/day. These were simply the result of multiplying the average flow and concentration limits. Since flow and concentration are useful operational parameters and already limited, expression in terms of weight is redundant and serves no purpose, so it has been discontinued.

Nevada Division of Environmental Protection
Fact Sheet

City of Fallon Wastewater Treatment Plant

NV0020061

Page 4 of 7

FLOW: The limits are based on the design capacity of the plant. Actual inflow is approximately 1 MGD.

TOTAL SUSPENDED SOLIDS AND BIOCHEMICAL OXYGEN DEMAND: These are the national secondary treatment standards set by U.S. EPA, with the 7 Day Average limitation used as a Daily Maximum instead. Current monitoring data shows the 30 day average values for both parameters to be approximately 5 mg/l.

FECAL COLIFORM: This is a standard permit condition based on the water quality criteria for classified waters. There were frequent violations of these limits in 2001 through 2003 as the operators struggled to meet the chlorine limit without the benefit of a dechlorination process. Since adding dechlorination in 2003 the results have typically been non-detect. Nationwide water quality criteria revisions currently being pursued by the U.S. EPA will likely result in this condition being expressed in terms of *E. coli* the next time this permit is renewed.

PH: The previous permit specified a sampling frequency of "daily when staffed". The reason for elevating this parameter beyond the weekly or monthly frequencies typically used is not clear or documented, so it has been reset to weekly. Also, the previous permit contained a limit of 6.5 to 9.5 s.u., which is at odds with the Division's fairly typical use of the class water criteria of 6.5 to 9.0. That was apparently done in recognition of what was perceived as the high pH of Fallon's water supply. In practice however, the monitoring data has shown the effluent pH concentrations to reside almost exclusively within the 6.75 to 8.4 range, with the maximum for the first half of 2005 being 8.07. This may in part be due to pH adjustment for arsenic precipitation at the new water treatment plant. The pH limit has been changed to 6.5 to 9.0 s.u. on the current permit.

TOTAL RESIDUAL CHLORINE: The previous permit had a total residual chlorine (TRC) limit of 0.1 mg/l in New River Drain at the downstream property boundary, and a free chlorine limit of 2 mg/l in the discharge. Aside from the compliance point, the TRC limit is more protective because it's numerically lower and includes the toxic chloramines. Since that time, a dechlorination process has been added and values of 0 have been reported for both parameters since June 2003. The TRC limit has been established in Nevada and other states for years; while the basis and purpose of the free chlorine limit is not apparent or documented. Based on these considerations, the 2 mg/l free chlorine limit has been removed, and the 0.1 mg/l TRC limit has been applied to the discharge.

NITROGEN SPECIES: The current permit continues the requirements of the previous one, with a 10 mg/l limit for total nitrogen and the other species simply reported. The total nitrogen limit is a conservative application of the nitrate standard for

Nevada Division of Environmental Protection
Fact Sheet

City of Fallon Wastewater Treatment Plant
 NV0020061
 Page 5 of 7

drinking water. The other species are of interest both for treatment plant operations and in consideration of effects on receiving waters.

TOTAL PHOSPHORUS: The current permit continues the reporting requirement of the previous one. The Class C water quality standard for total phosphorus is 1.0 mg/l. Monitoring data shows the effluent consistently well below 0.5 mg/l, averaging 0.12 mg/l for the first half of 2005.

TOTAL DISSOLVED SOLIDS (TDS) The current permit continues the reporting requirement of the previous one. Data gathered over the years shows the discharge concentration to be approximately the same as New River Drain; 750 mg/l.

DISSOLVED OXYGEN: The current permit continues the reporting requirement of the previous one. Effluent data has shown a slight downward trend since 2001, going from an approximate average of 3 mg /l down to 2.1 mg/l currently. The background concentration in New River Drain of approximately 4.3 mg/l appears unaffected by the discharge. The water quality criteria for warm water fisheries is 5.0 mg/l.

PRIORITY POLLUTANTS: The current permit continues the requirement of the previous one for reporting the results of annual analyses for these constituents. Results are given in the table below. The analyses were not conducted in 2001, and only volatile and semi-volatile analyses were conducted in 2002 and 2003. The detections do not appear significant.

Annual Priority Analyses

Year	Method	Constituent	Concentration	Criteria ¹
2004	volatile organics	chloromethane	3.3 µg/l	-
		chloroform	8.6 µg/l	100 ² µg/l
		bromodichloromethane	7.5 µg/l	100 ² µg/l
		dibromochloromethane	3.4 µg/l	100 ² µg/l
	semivolatiles		nd	
	pesticides	delta-BHC ³	0.051 µg/l	0.080 µg/l ⁴
	PCBs		nd	
	metals	arsenic	0.063 mg/l	0.05 mg/l ¹
		zinc	0.07 mg/l	f(H) ⁵
	total cyanide		nd	
	asbestos		nd	
2003	volatile organics		nd	
	semivolatiles		nd	
2002	volatiles		nd	
	semivolatiles		nd	
2001	-			

Nevada Division of Environmental Protection Fact Sheet

City of Fallon Wastewater Treatment Plant

NV0020061

Page 6 of 7

1. NAC 445A.144
2. Total trihalomethanes
3. Isomer of Lindane
4. For Lindane
5. Criteria is a function of hardness, which was not determined.

WHOLE EFFLUENT TOXICITY: The previous permit had a one time requirement for a whole effluent toxicity test, the results of which were negative. Absent any compelling reason to conduct another test, the requirement has been removed from the current permit.

NEW RIVER DRAIN SAMPLING: The previous permit had a requirement for sampling New River Drain above and below the discharge, and at the outlet to Harmon Reservoir, mostly for the parameters given in the *Receiving Water Characteristics* section of this fact sheet. The Harmon sample point has been removed from the current permit based on it's distance from the treatment plant, intervening inputs, and the variability of TCID operations described above. The requirement to measure flow has also been removed based on the difficulty of producing meaningful numbers in a tail water ditch.

Compliance History Frequent fecal coliform violations ended with installation of the dechlorination system in 2003. There are no outstanding compliance issues with this plant.

Schedule of Compliance: The facility is required to meet the effluent limitations upon issuance of the permit.

Procedures for Public Comment: Notice of the Division's intent to renew discharge permit NV0020061, authorizing continued discharge from the City of Fallon's wastewater treatment plant to New River Drain, is being sent to the **Lahontan Valley News** and **Fallon Eagle Standard** for publication, and is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit must submit written comments to the Division within (30) days of the publication date. The comment period can be extended at the discretion of the Administrator. The deadline for receipt of all written comments is 5:00 P.M. Wednesday February 22, 2006. Comments received after the deadline will be accepted if postmarked on that date or before.

A public hearing on the proposed determination can be requested by the applicant, any affected state or interstate agency, the Regional Administrator, or any interested agency, person, or group of persons. The request must be filed within the comment period and indicate the interest of the person filing the request and the reasons why a hearing is warranted. Public hearings granted by the Division are conducted in accordance with NAC 445A.238.

Nevada Division of Environmental Protection
Fact Sheet

City of Fallon Wastewater Treatment Plant

NV0020061

Page 7 of 7

The final determination of the Division may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Proposed Determination: The Division has made the tentative determination to renew the proposed discharge permit for a five year term.

Prepared by: Robert J. Saunders
 Staff Engineer
 Bureau of Water Pollution Control
 January 11, 2006